

## Turtles involved with Longline gear in the Gand Banks.

Data from the large pelagic logbook and the NMFS observer file were used to identify times and locations of turtle involvement with longline gear in the Grand Banks during the months July through December.

### Description of data sources.

#### Large pelagic logbook (LPL):

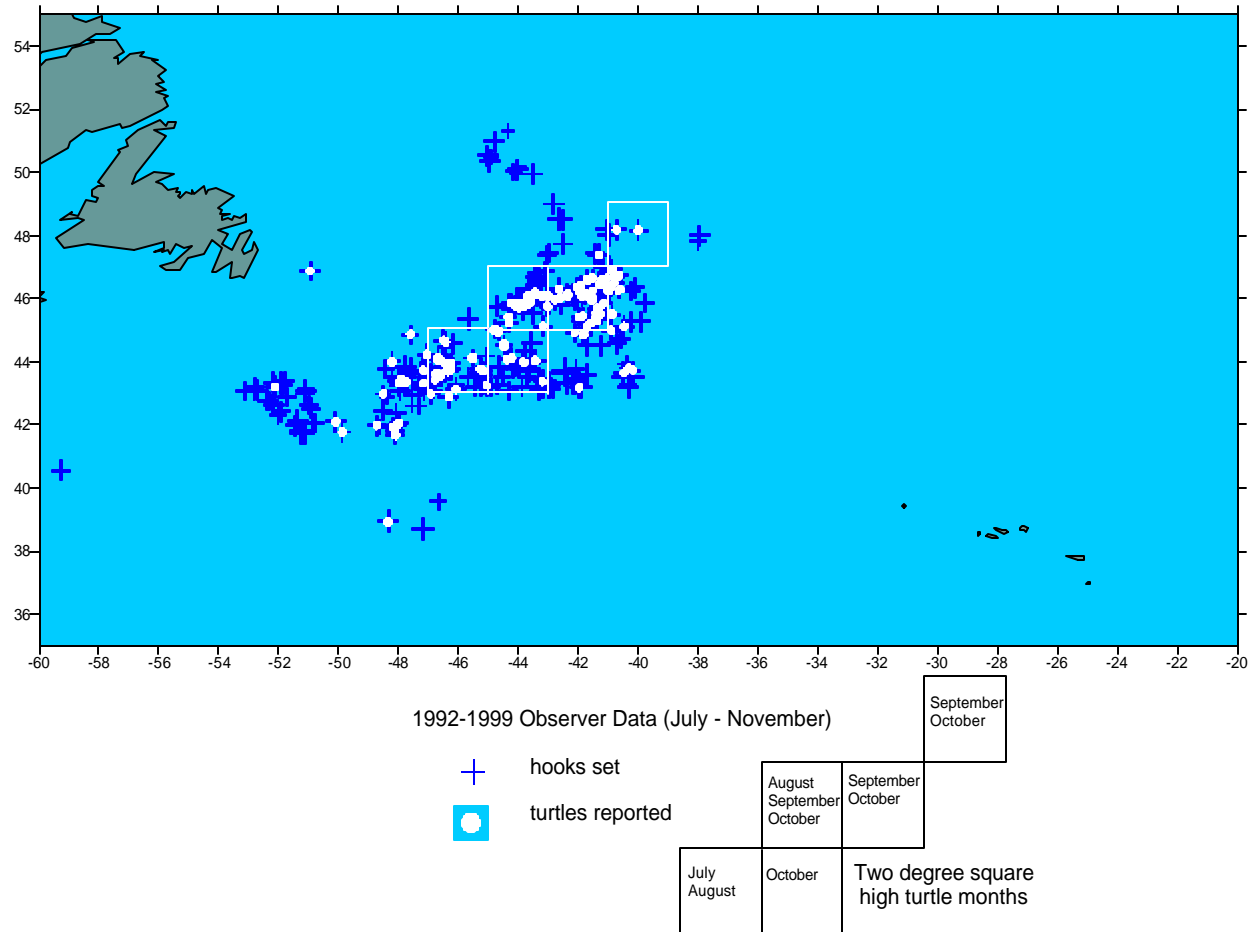
U.S. Atlantic, Caribbean and Gulf of Mexico fishing vessels which land swordfish have been required to provide daily records of effort and catch since October 1986. Numbers of turtle involved, injured, and killed have been reported to this file since 1992. Although a variety of gear types are represented, the predominant gear type (90% of vessels reporting) is longline gear. Fishing effort in this area is seasonal. Very little effort was reported in December.

Table 1. Numbers of turtles reported involved, injured, or killed by pelagic longline vessels in the Grand Banks between July and December 1992-1999.						
	Green	Hawksbill	Kemps Ridley	Leather- back	Logger- head	unknown
involved	74	129	16	793	2020	10
injured	1	0	0	6	35	0
killed	0	0	0	8	3	0

#### NMFS Observer (NMFSO):

Nation Marine Fisheries Service observers have observed a random sample of longline vessels targeting swordfish and tuna since 1992. Numbers of fish and turtles landed, discarded dead and discarded alive are recorded in this file as well as gear and location information.

Table 2. Numbers of turtles observed released alive or killed by pelagic longline vessels in the Grand Banks between July and December 1992-1999.				
	Green	Leatherback	Loggerhead	unknown
released alive	8	106	225	1
released dead	1	0	0	0



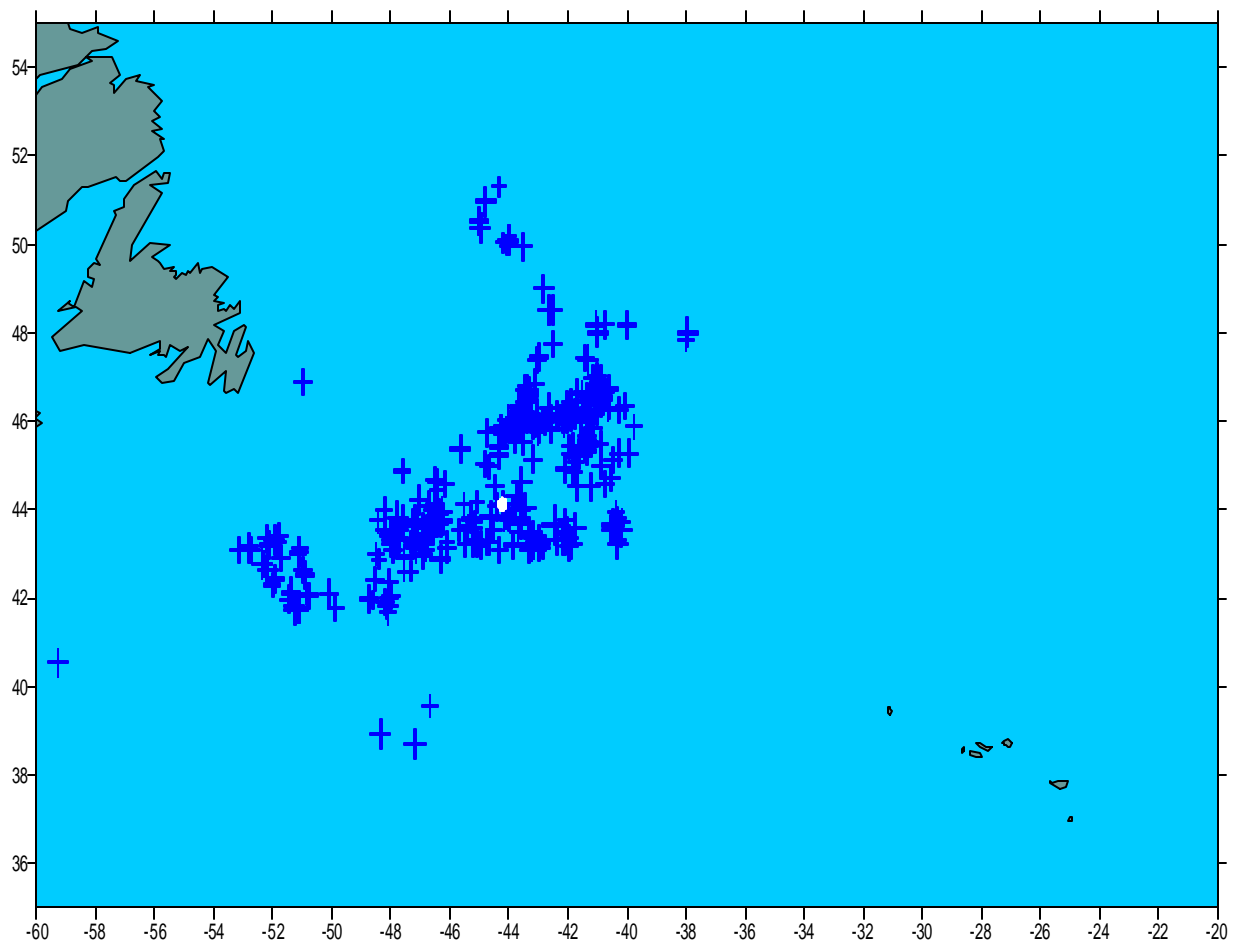
**Figure 1.** Locations of observed effort (hooks set) and turtle involvement (turtles reported) from NMFSO form July through November are shown on this map. Squares indicate areas of highest turtle involvement. The relevant months of high involvement for each square are indicated by listing the months in the square diagram above this caption.

Observer data were grouped within each year by month and two degree square . A GLM model was run: all turtles reported vs year and month-square. The number of hooks reported in the month-square was used as a weighting variable. Month-squares were ranked based on the LSMEAN value from the GLM. The ten month-squares with the highest estimated turtle involvement (based on the LSMEAN values) are shown in Figure 1. The month written inside the square indicates that the square was high for that month.

Table 3 gives the percentage decreases in turtles involved (relative to total involvement in the Grand Banks July-Dec), effort in hooks, and catch of other species resulting from closure the U.S. fishery in the Grand Banks, using NMFS Observer data. Table 5 gives the same information based upon Large Pelagic Logbook data. Decreases resulting from closures of high month-squares (based on NMFSO).

are shown in Table 4.

Table 3. The percent decrease with total closure for month based on observer records							
	All Turtles	Swordfish	Tuna	Mako	Swordfish	Blue	HOOKS
	Landed			Sharks	Dead Dis	Sharks	
total	341	6240	1904	892	1703	11263	265744
July	28%	39%	22%	60%	50%	30%	35%
August	25%	16%	4%	20%	18%	18%	14%
September	36%	19%	23%	9%	15%	13%	16%
October	9%	24%	29%	8%	13%	29%	26%
November	2%	3%	23%	3%	4%	10%	9%
Table 4. The percent decrease with closure of high two degree squares for month based on observer records							
	All Turtles	Swordfish	Tuna	Mako	Swordfish	Blue	HOOKS
	Landed			Sharks	Dead Dis	Sharks	
July %	6%	8%	3%	14%	10%	10%	6%
Aug %	9%	4%	0%	4%	3%	3%	4%
Sept %	24%	13%	15%	6%	9%	7%	10%
Oct %	1%	9%	7%	3%	3%	7%	8%
Table 5. The percent decrease with total closure for month based on logbook records							
	All Turtles	Swordfish	Tuna	Mako	Swordfish	Blue	HOOKS
Month	Landed			Sharks	Dead Dis	Sharks	
total	3095	119237	23659	6846	11936	273307	4749322
July	36%	22%	14%	39%	30%	20%	22%
August	24%	27%	19%	28%	22%	29%	25%
September	24%	29%	31%	17%	23%	23%	26%
October	15%	19%	23%	13%	19%	21%	20%
November	1%	3%	12%	3%	5%	7%	7%
December	0%	0%	1%	0%	0%	0%	0%



1992-1999 Observer Data

+ hooks set

● turtle reported dead (1 green turtle)

Figure 2. Location of turtle observed dead. (NMFSO)

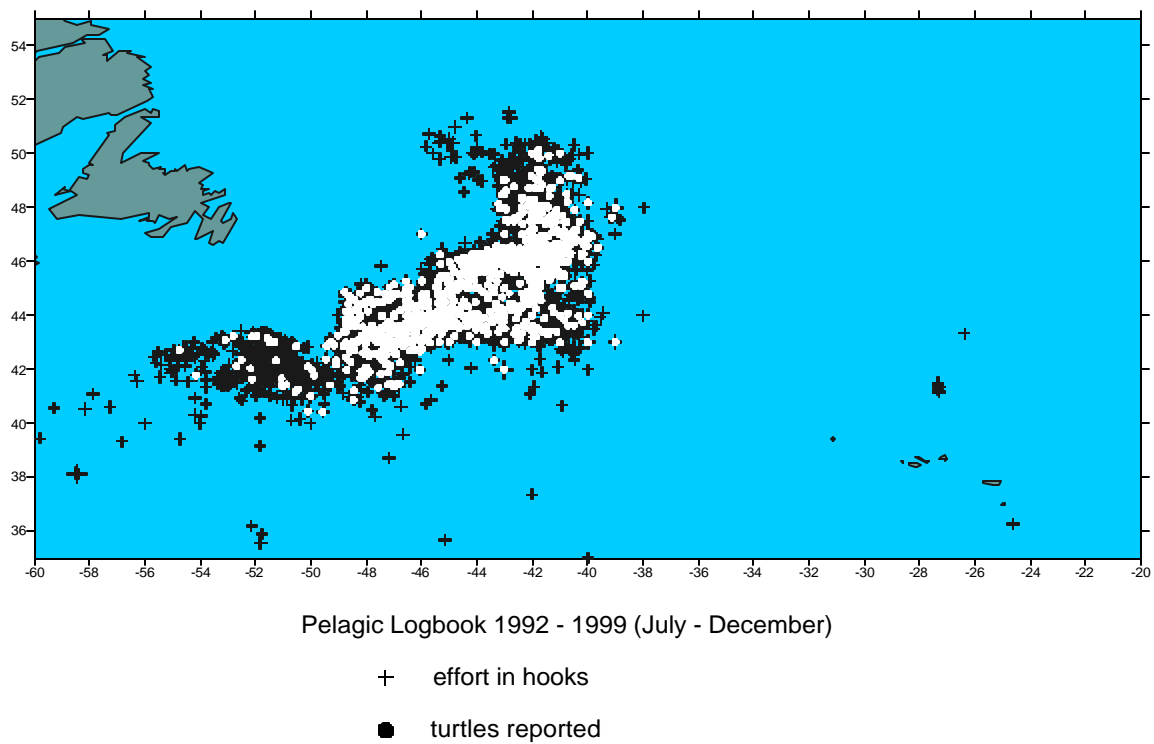


Figure 3. Locations of reported effort (hooks set) and turtle involvement (turtles reported) from LPL from July through December are shown on this map.

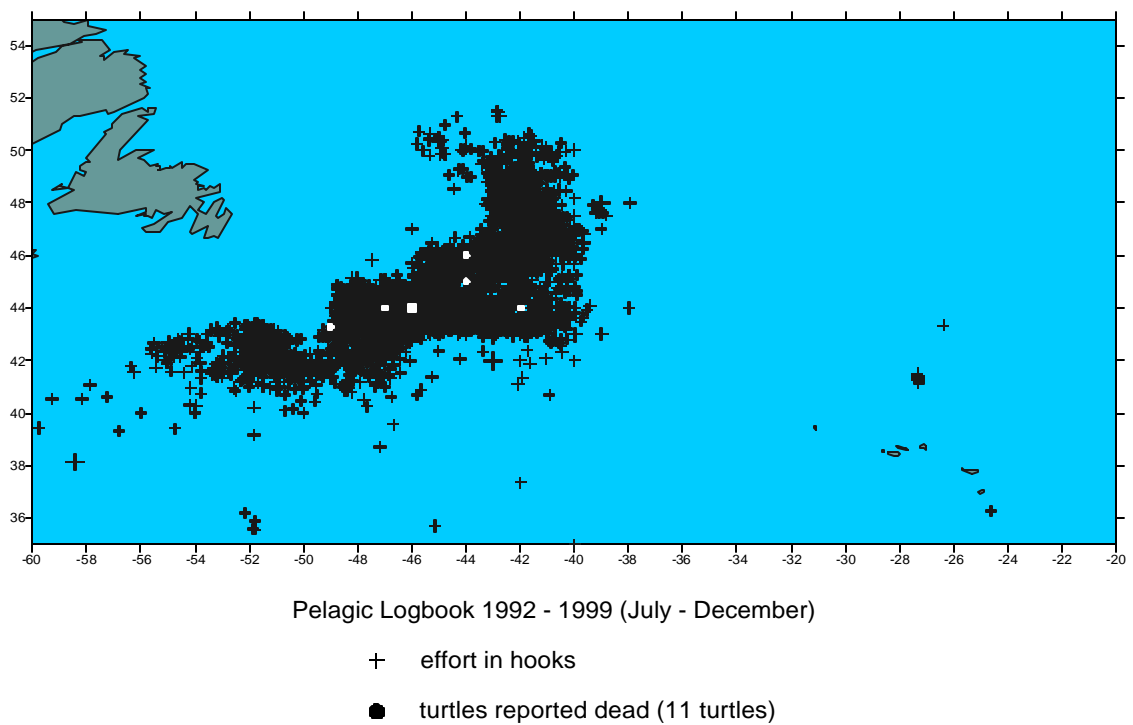


Figure 4. Locations of turtles reported killed. (LPL)

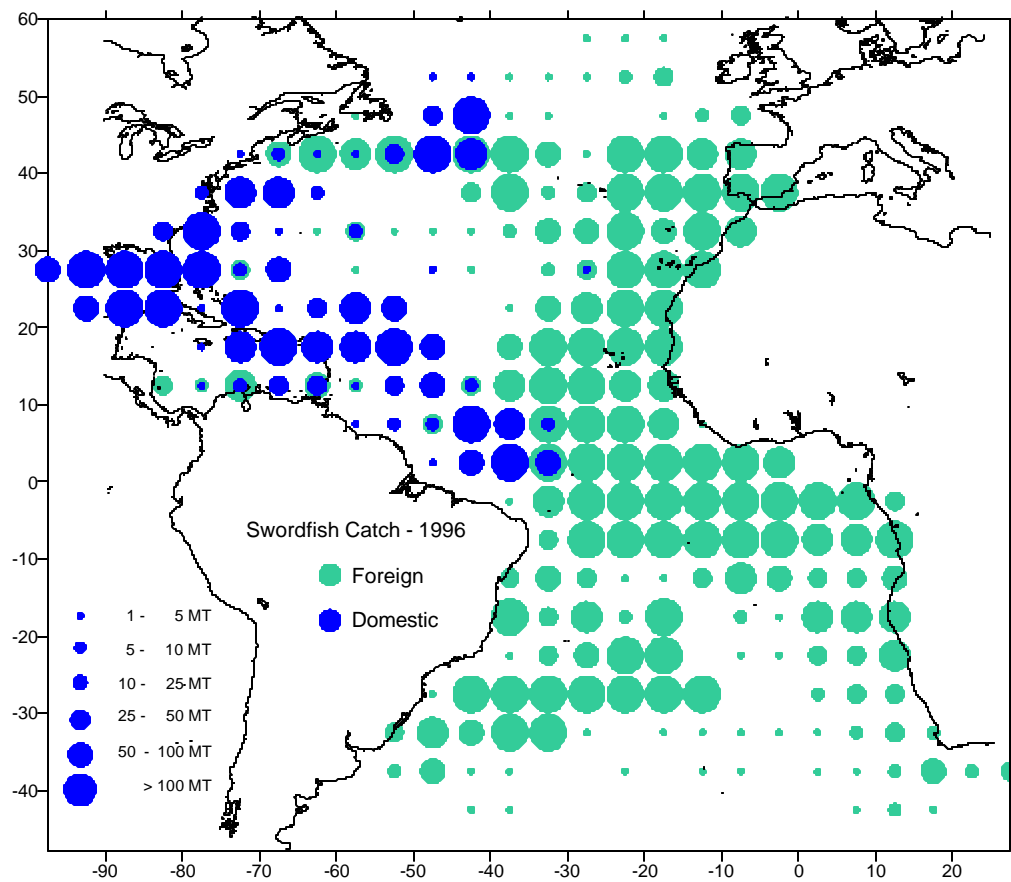


Figure 5. Domestic (U.S.) and foreign swordfish catch in 1996.